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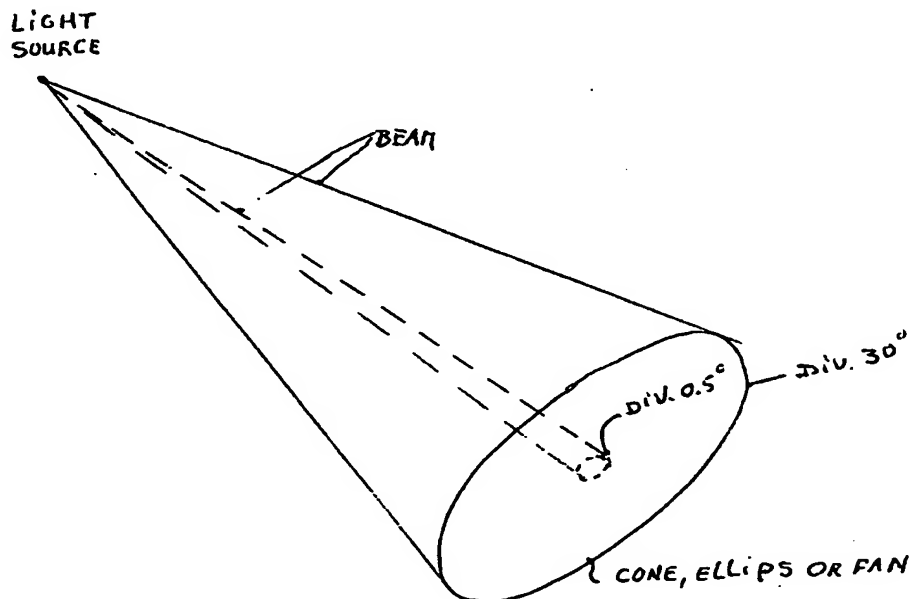
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(72) Inventor: **HOGERVORST, Wim** [NL/NL]; Tormentil 32, NL-2631 DD Nootdorp (NL). *For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: **TAIL LIGHT WITH NARROW BEAM**



(57) Abstract: The present invention provides a safety tail lighting system for use in low visibility conditions caused by fog, mist, rain, smoke, snow or other particular matter in the atmosphere. Through optical means and a conventional light source or a light source which directly produces a narrow cone- or fan-shaped beam, possibly in combination with optical means also, a narrow cone and/or fan-shaped beam of visible light is created for better detectability of a land-, sea- or aircraft and the reduction of the glare in the vicinity of the craft in such low visibility conditions. The said lighting system should preferably use a LED (Light Emitting Diode) as light source and be capped with lamp caps commonly used for light bulbs of land crafts.

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DESCRIPTION**Title.**

Tail light with narrow beam.

Technical field.

The present invention concerns in general warning-, marking- or safety lights on movable or stationary objects. More particularly the present invention is directed to the use of laser lights or light emitting diode lights to supplement or replace the visible light output of current lights, in particular tail lights, found on automobiles, ships, aircraft or the like, in poor visibility conditions.

Background of the invention.

The better detectability of current safety lights in poor visibility conditions, in particular tail lights of automobiles or other road vehicles, is obtained by using "higher power" lamps, which cause even more reduced forward-visibility when approaching a preceding vehicle, having such lights switched on, due to disturbing glare of those lamps. Since the present invention makes use of lamps with a greatly reduced light emitting beam diameter the glare of those lamps in the close vicinity of such vehicle will be greatly reduced hence improving the forward visibility of the approaching vehicle considerably. Thanks to concentrating the light output in a narrow beam the light flux in a specific direction will be relatively higher compared to that of a conventional lamp and consequently the detectability range of a preceding vehicle will be increased.

Detailed description of the invention.

The present invention provides a better detectable and safer fog-tail light system compared to conventional systems with the same power consumption for air-, water- and land crafts. The system can be switched on and off by the operator of the craft in the same way as with the current conventional systems. The shape of the beam created by the light source alone or in combination with an optical system (mirrors, condensers, lenses) is cone like. The cross section of the cone preferably to be elliptical. Depending on the application the divergence of such beam has to be between 0.5° and 30° (see example in fig.1). Since certain types laser/LED lights can provide a divergence in that range without the use of optical means these light sources will be preferred, moreover because they produce coherent light which has a lower scatter factor compared to incandescent light. For fog-tail lights of land crafts and water crafts laser/LED lights in the range of respectively 630 - 800 and 575 - 585 nanometer should be chosen. As soon as Laser/LED lights which emit "equal energy white" light become available those should be given preference

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for fog-tail lights of water crafts. The present invention can be built in a housing and be mounted as a stand alone unit at a craft or preferably be combined with a lamp cap commonly used in land crafts and automobiles in particular and known as type BA15. Also a laser- or LED light source could be combined with the normal incandescent BA15 capped light source either outside or inside the glass bulb. If required the present invention will be provided with a voltage converter in order to adapt to typical voltages used in air-, water- and land crafts.

Claims.

1. A safety lighting assembly for use in low visibility conditions caused by fog, mist, rain, snow, smoke or other particular matter in the atmosphere, comprising:
a cone- or fan beam shaping light source assembly, preferably emitting substantially coherent light in the visible spectrum when electrically energized and the beam of which has a divergence of between 0.5° and 30° with preferably an ellips like- or fan beam cross section, whereby said beam is visible to the naked eye equally well or better than the commonly available fog-tail lights under said poor conditions of the atmosphere.

2. The safety lighting assembly of claim 1, wherein said light source comprises a laser diode light source, emitting substantially coherent light with a wavelenght in the range of 630 to 800 nannometer.

3. The safety lighting assembly of claim 2, emitting in the range of 575 to 585 nannometer.

4. The safety lighting assembly of claim 2 or 3 provided with optical means in order to to create a certain beam shape.

5. The safety lighting assembly of claim 2 thr. 4, wherein said light source comprises a LED (Light Emmitting Diode).

6. The safety lighting assembly of claim 5, wherein said light source comprises a LED emitting an aggregate of wavelenghts between 350 and 800 nannometer resulting in white light of which the combination of wavelenghts approaches the point E of the colour triangle (known as "equal energy white") as much as possible.

7. The safety lighting assembly of claim 1, wherein said lightsource comprises an incandescent light source and optical means to create the said light beam.

8. The lighting assembly of claim 1 through 7 being adequately capped to fit into the regular fittings of tail lights of air-, water- and land crafts.

9. The safety lighting assembly of claim 1 thr. 8 mounted in a housing one side of which is provided with transparent blanc or coloured material such as perspex or plastic and in which the safety lighting assembly will be mounted such that the emanating beam of the lighting assembly passes the transparent side more or less perpendicularly.

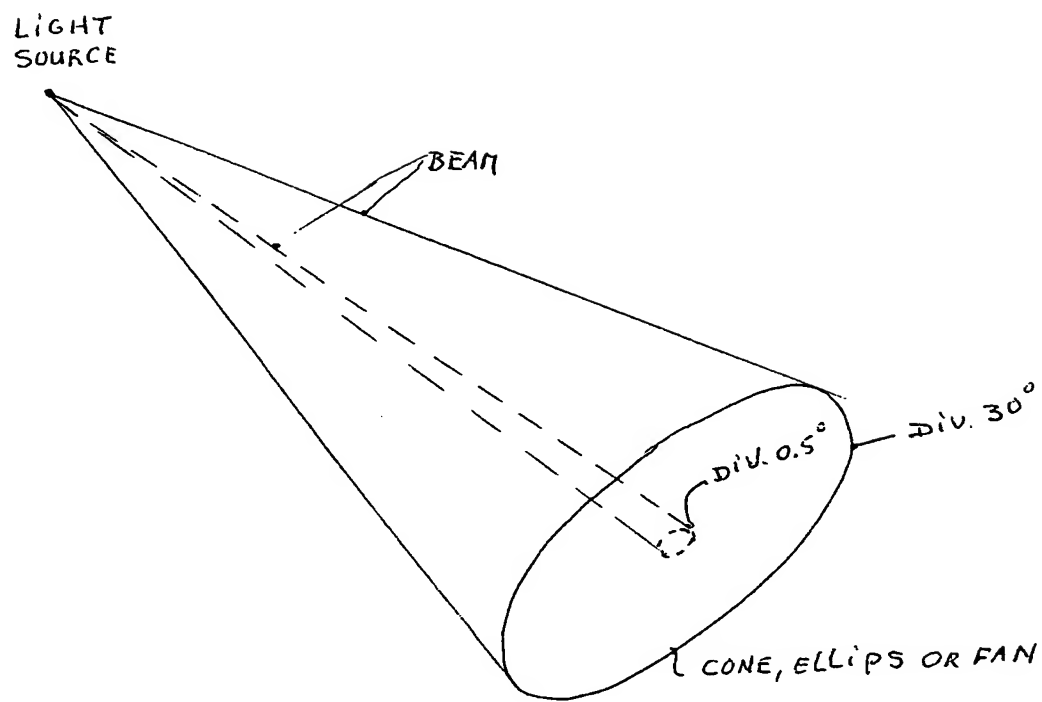


FIG. 1